

Committee is intended; but it is to be hoped it will adhere to its original classification.  
J. MARK BALDWIN.  
Oxford, December 18.

### The Stockholm Fisheries Conference and British Fishery Investigations.

FROM Mr. H. M. Kyle's letter in your issue of December 14, it is clear that he is ignorant of the present position of the British Government with regard to fishery investigations. The great obstacle in the way of such investigations, as every one who has taken any part whatever in their organisation is aware, has always been the want of adequate funds to carry on the researches. The investigations, if properly conducted, are very expensive, involving not only the employment of highly-trained naturalists, but also the equipment of laboratories on shore and of sea-going ships capable of visiting the fishing grounds. The latter item is so costly, that no vessel capable of keeping the sea has yet been systematically employed for scientific fishery work in British waters.

On account of the expense, there is little likelihood of investigations upon an adequate scale being attempted without the use of public money. This is recognised by the Government, and money has been spent by H.M. Treasury for biological and fishery researches in three different directions. In England the Marine Biological Association of the United Kingdom, which was started by private effort in order to promote (to use Prof. Huxley's words) "researches leading to the improvement of zoological and botanical science, and to an increase of our knowledge as regards the food, life-conditions and habits of British food-fishes and molluscs," received in 1885 a Government grant of 5000*l.* towards the cost of the erection of the first laboratory at Plymouth, and has since received an annual grant, which from 1892 has been 1000*l.* Altogether some 13,000*l.* of Government money has been spent, in addition to an equal amount derived from private sources.

In Scotland the Fishery Board receives from the public funds a yearly sum for scientific investigations which amounts, I believe, to about 3000*l.*; whilst in Ireland a single sum of 2,500*l.* has recently been granted to assist the fishery investigations of the Royal Dublin Society.

We may now examine in more detail the position of each of the three bodies entrusted by the Government with the expenditure of money for fishery work in England, Scotland, and Ireland respectively.

At the time of the foundation of the Marine Biological Association, the Government, in making the first grant of money, placed upon the Association the responsibility of doing for England work of the kind done in Scotland by the scientific department of the Fishery Board. Encouraged by the support received from public and private sources, the Association proceeded to lay down the necessary machinery for carrying out both scientific and economic work, and a sum of 12,000*l.* was spent in building and equipping the Laboratory at Plymouth as a first step in that direction.

The foundations of the Association were laid upon a liberal scale, involving the expenditure of a considerable capital, but the superstructure remained to be built. The subsequent yearly financial support was not on a scale commensurate with that given to the Association on its foundation, and it has never been possible to make full use of the machinery provided. By far the greater portion of the income of the Association is necessarily devoted to expenses of establishment and organisation, and only a small sum remains for the employment of naturalists to conduct investigations. The funds have never reached a figure which would render the maintenance of a sea-going vessel with which to reach the fishing grounds a question which could be practically considered. Having regard to the money at its disposal, the Association may fairly claim to have produced a body of work which in quality will compare with that done by any similar organisation elsewhere. It must not be supposed, however, that one man can produce the work of six, and it has never been possible to employ at Plymouth more than one naturalist devoting his attention to fishery work.

When, five years ago, the Council did me the honour of appointing me to the executive office of the Association, I undertook the duties of the post knowing that the justification for the yearly expenditure in maintaining the Laboratory in a state of efficiency lay, not in the amount of work which could be im-

mediately produced, but in the fact that a solid foundation had been laid, which was capable, with an increased income, of producing a very large amount of valuable work. Further experience has confirmed this view, and I have also been forced to admit, perhaps reluctantly, that the only practical method by which the necessary increase of income can be obtained is by the development, on the part of the Government, of the fishery branch of the work. That the work of the Association was never intended to be confined to what can be done at Plymouth is shown not only by its name and the avowed objects of its promoters, but also by the fact that for a number of years the Association maintained a naturalist and kept open a laboratory at Grimsby for the study of North Sea fisheries. The investigations made by Mr. Holt and Mr. Cunningham in this connection will, in usefulness, rank with the best fishery work which has been done in the North Sea, and it was due only to lack of funds that these investigations could not be continued.

Turning now to the Scottish Fishery Board, it will be admitted that, so far as its scientific investigations are concerned, a similar condition of things exists, in a less pronounced degree. For years an urgent appeal for a steamer capable of keeping the sea has been a constantly recurring feature in the Reports of the Board, and the scientific superintendent will be the first to agree with me in saying that the scientific staff is by no means numerically strong enough to carry out the investigations upon the scale which their importance and difficulty demand.

In Ireland, where the Royal Dublin Society is working in close connection with the fishery inspectors, and is supported by Government money, it has also been impossible to provide a proper vessel, and Mr. Holt is working single-handed, except for occasional volunteer help, although he has accommodation for a number of naturalists.

All past experience has shown that the British Government is very reluctant to spend money upon scientific investigations of any kind, and at the present time it is practically certain that any increased expenditure in this direction will be limited in amount. It is of the utmost importance that what money is spent should be put to the best possible use. Under the circumstances described, and considering the amount of public money which has already been expended on organisations and establishments, all of which are awaiting development to produce their full return of work, I cannot see any justification for asking the Government, as a next step, to provide a considerable sum for a new organisation with a new laboratory, which to judge by all that has happened in the past would soon find itself as unable as its predecessors to adequately carry out its schemes, from the want of proper financial support.

The first demand should be for such a slight reorganisation of existing bodies as will bring them into working contact, a rearrangement which could be brought about with little if any increase of expenditure, and a proper provision of ships and naturalists for carrying out the investigations. When this has been obtained the co-ordination of British investigations with those of neighbouring countries will be a matter of no great difficulty, and one which, in my opinion, can be carried out with no such expenditure for organisation as that suggested by the Stockholm Conference.

As Mr. Kyle has seen fit to introduce matters of a somewhat personal nature into his letter, I may, perhaps, be permitted to say that I make no pretence whatever of being a specialist in fishery investigation, my scientific work having for the most part lain in other directions, nor is it my intention to attempt to alter this condition of things. Should the Government see fit to largely develop the work of the Marine Biological Association on the lines I have indicated, I fully realise that they will wish to have in the executive post a specialist in fishery matters, and this is an eventuality which I am prepared to meet. I should also add that the opinions expressed in this letter are entirely of a personal nature, and I am quite unaware whether or not they would be shared by a majority of the members of the Council of the Association.

E. J. ALLEN.

The Laboratory, Plymouth, December 16, 1899.

### Dr. W. Kobelt and the Mediterranean Fauna.

THE second part of Dr. W. Kobelt's "*Studien zur Zoogeographie*" has been in my hands since its issue, viz., about a year ago, and I have had ample time to become fully acquainted with its

merits and its defects. The subject is one which has a singular interest to me, for I have been working out the fauna of Italy and its dependent seas, especially in relation to Vertebrata, for the last five and twenty years, and have formed a collection in which about 38,000 specimens (25,000 being fish) represent the vertebrate fauna of Italy and the seas which surround it. I soon found that although strong in Mollusca, Dr. Kobelt was weak in the knowledge of other classes of animals, and that along with solid fact" his book also contains a number of grave inaccuracies. Now I am very busy, and find that life is far too short to allow the waste of time caused by polemics; I usually, therefore, avoid them, and should certainly have passed over Dr. Kobelt's errors and omissions had not your reviewer's remarks in No. 1570 of NATURE (page 99) rendered it imperative that I also should ask you to allow me to make a few remarks. NATURE has now fully undertaken the noble task of keeping scientific investigators up to the mark as regards the general progress of knowledge, and it is not fair that it should unwittingly propagate error. Now of the several chapters of Dr. W. Kobelt's book, the poorest and the worst is by far the one (*viertes Kapitel*) which he has devoted to "Das Mittelmerr," the classic ground of the renowned labours of Edward Forbes and of so many before and after him. How ever could a German living in the land of bookworms and patient labourers in bibliography write such a chapter, and come amongst other incorrect and incongruous conclusions, to that pyramidal error that the abyssal parts of the Mediterranean are azoic? Good and learned Dr. Carpenter said something similar about twenty years ago, after the fruitless dredgings of the *Porcupine* and *Shearwater*, but he lived to know that he had been mistaken, and we discussed the very subject together at a dinner at his own house in June 1883.

It was on August 5, 1881, that I sent an express across Asinara to Porto Torres, North Sardinia, bearing a letter to the editor of NATURE in which I gave the first account of the discovery of typical representatives of the North Atlantic deep-sea fauna in the abyssal area off North-west Sardinia; on that occasion specimens of *Polychaetes* (Willemaesia), *Bristinga* and *Hyalonema* had been secured with the trawl (NATURE, August 18, 1881, p. 358). A few days later, from depths between 3000 and 1500 metres, I got two new forms of Macrurid fishes, so characteristic of the abyssal fauna, viz., *Chalinura mediterranea* and *Hymenocephalus italicus*; of the former the two specimens then caught are as yet the only ones known. This was the first deep-sea campaign of the *Washington*; we were all new to such work, and yet a few weeks later, at the meeting of the Third International Geographical Congress at Venice, I was able to lay before the savants there assembled a preliminary report, in which the existence of a deep-sea fauna in the Mediterranean, similar to that of the North Atlantic, but evidently with some special features, was fully proven. Our greatest depth was then 3624 metres, between Sardinia and Sicily; thence we dredged up fourteen living animals: an Anomourous Decapod, an Annelid, and several singular small Holothuroids, as yet unstudied. The two following summers, about a month each year, were dedicated to thalassographic researches in the Mediterranean by the Italian man-of-war *Washington*, but the trawl was hardly ever used at the greater depths. The authorities of the navy, and I am sorry to add also those of the Lincei, appeared to have lost all interest in that fertile field of research. Years after, a little deep-sea trawling was done by the Austrians round about Crete; they got some good abyssals, amongst which *Bathypterois*, the singular tentacled fish; they also found the greatest depth yet recorded in the Mediterranean, over 4000 metres. The enlightened Prince of Monaco has also given a trial to some of his wonderful deep-sea traps, always with good results, but his systematic abyssal researches have all been outside our "Mittelmeer" hitherto.

I have never lost any opportunity since 1881 of doing my level best to promote the continuance of those thalassographic and especially abyssal researches, which had been so well begun by the *Washington*; my last appeal was made to the Third Italian Geographical Congress, which met at Florence last year, my proposals were adopted unanimously in the proper section, and I am beginning to hope that they may soon have a practical result.

I have not the slightest doubt that the abyssal fauna of the Mediterranean is a rich one, in which not a few novelties will turn up. I have already in my Italian collection about seventy

species of typical abyssal fish—Elaasmobranchs and Teleostei—and have, besides those already mentioned, described some very singular forms hitherto unknown, and apparently peculiar, such as *Bathophilus* and *Eretmophorus*.

After all this you will admit that it is rather sad to read in NATURE of November 30, 1899, that "the Mediterranean, as is well known, sinks in places to profoundly abyssal depths; the actually greatest depth appears to be 4400 metres; but here no living organisms have been found. It is purely azoic; the reason for the want of life is, according to the author, the want of oxygen and the abundance of carbonic acid." I should like to see the above assertion proved.

I may add that Dr. Kobelt, who is a specialist in Malacology, appears to be unacquainted with the abyssal molluscs which I dredged up from great depths in the Mediterranean, and which were described (several as new) shortly after by my lamented friend, J. Gwyn Jeffreys. And at p. 105 of his book he says that *Nephrops norvegicus* is not found in the Mediterranean. Now in 1881 I dredged up specimens from depths of 765–823 metres, in that sea, off the west end of Sicily.

Dr. Kobelt has a grim way of disposing of the Cetacea of the Mediterranean. These are much better known than he appears to be aware; I know positively that thirteen species occur, four being *Mystacoceti*; none are peculiar, and could hardly be expected to present that case, but it is of singular interest that the common porpoise (*Phocaena communis*) is certainly absent from the Mediterranean, and said to be common in the Black Sea. Our seal (*Pelagius monachus*) is nearly peculiar to the Mediterranean and Adriatic, where *Phoca vitulina* never occurs. This hardly looks like "an impoverished gulf of the Atlantic," as Dr. Kobelt is pleased to style our "Mittelmeer" as regards mammals. And, turning to terrestrial mammalia, what of the Mediterranean barrier *re* Mufions (*Ovis musimon*) in Corsica and Sardinia; *Cervus corsicanus*, with the same peculiar distribution—these mammals are found in a wild condition nowhere else—and *Cervus dama*, wild only in Sardinia? I will allow the *Inuus candatus* as an importation, but hardly as a native product of the "Rock" of Gibraltar!

Certainly I can hardly commend Dr. Kobelt's book to the serious student of zoo-geography; and I cannot help a bitter reflection when I come to compare mentally the favourable review it has had in these pages, where a few weeks earlier a volume, of which one of the co-authors may be styled the father of zoo-geography, and is emphatically one of the most meritorious of England's zoologists, was treated in a very different style (*vide* NATURE, No. 1549, vol. ix., p. 217).

HENRY H. GIGLIOLI.

Royal Zoological Museum, Florence,  
December 8, 1899.

PROF. GIGLIOLI appears to blame me for a too favourable review of Dr. Kobelt's recent book. In that review I pointed out some errors, as I thought, of inference as well as of omission: I still think however that Dr. Kobelt has produced an usefully elaborate and painstaking work, and therefore beg for a short space wherein to reply to such of Dr. Giglioli's criticisms as affect my own review.

Dr. Giglioli justly comments upon the fact that many deep-sea animals have been dredged in the Mediterranean. But, as I understand him, Dr. Kobelt does not deny this; he merely observes that the abyssal fauna of the Mediterranean is not special to that sea. Dr. Giglioli himself remarks upon the occurrence of "typical representatives of the North Atlantic deep-sea fauna," which is in accord with what Dr. Kobelt says. That there are some forms peculiar to the Mediterranean does not necessarily invalidate the justice of Dr. Kobelt's generalisation. I do not read Dr. Kobelt as saying that "the abyssal parts of the Mediterranean are azoic." How could I, considering that he gives (p. 115) two lists of deep-sea Mollusca? I understood him to mean that one particular locality of 4400 metres in depth happened to be so. In this matter I simply referred to Dr. Kobelt's statement. I neither dissented nor assented. Dr. Giglioli is no doubt right in asserting that the whales of the Mediterranean are not only not peculiar but could not be expected to be. But if the number with which he is acquainted (13) represent the entire Cetacean fauna of that sea, then Dr. Kobelt is most emphatically right in speaking of it as an impoverished gulf of the Atlantic.

THE REVIEWER.